

THE WATER AUTHORITY
ANNUAL REPORT
1992



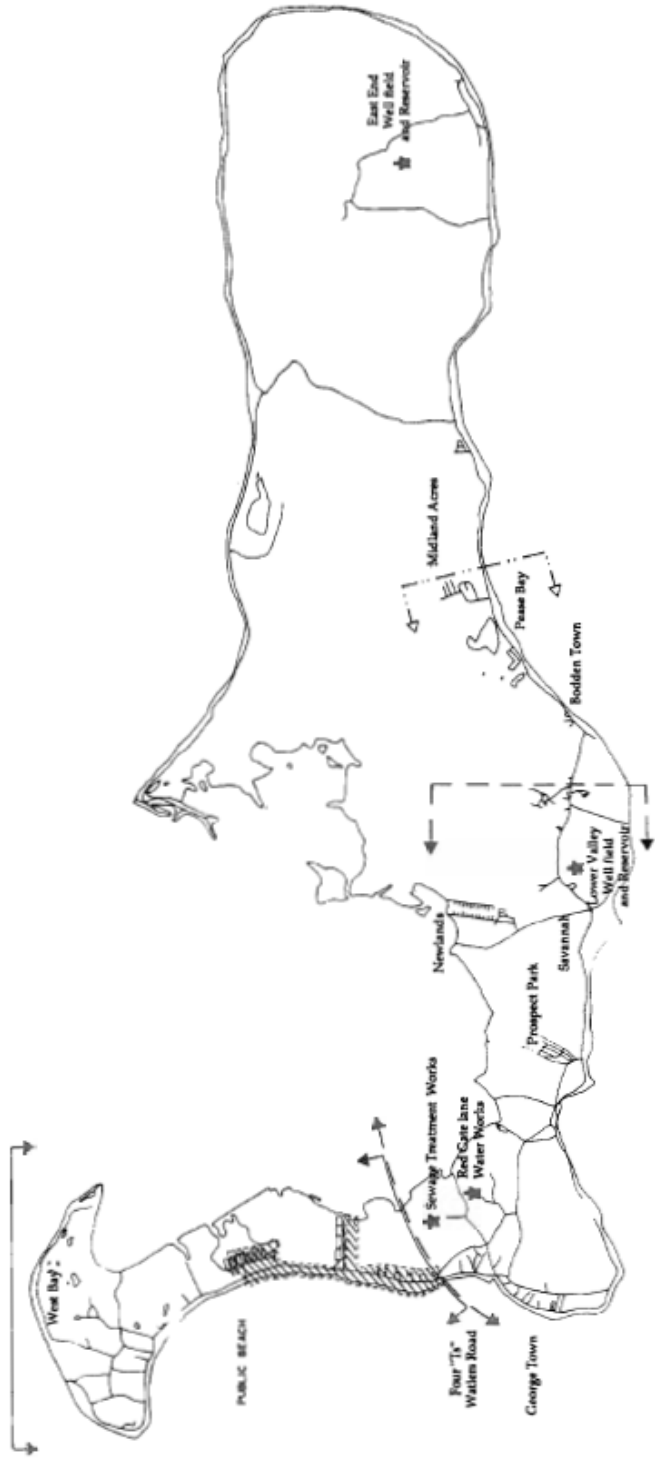
*THE PORTFOLIO OF
HEALTH AND HUMAN SERVICES*

**THE WATER AUTHORITY
Cayman Islands
ANNUAL REPORT
1992**

INDEX

	Foreword - Hon McKeeva Bush JP	Page	2
	Chairman's Report	Page	4
1.	General	Page	6
2.	Administration and Finance	Page	8
3.	Water Resources	Page	13
4.	Quality Control and Related Matters	Page	15
5.	Water Supply - Operations	Page	22
6.	Sewerage - Operations	Page	26
7.	New Works - Water Supply and Sewerage	Page	28
8.	Water and Sewerage Operators	Page	30
	Financial Statements	Page	31

Grand Cayman - Public Water Supply and Sewerage Facilities



Key

- Cayman Water Company water supply area
- - - Water Authority water supply area December 1992
- - - Water Authority eastern limited of approved water supply area to be completed in 1993.
- ▨ West Bay Beach Sewerage drainage area.

Foreword

by

**The Honourable McKeeva Bush MLA JP
Member for Health and Human Services**

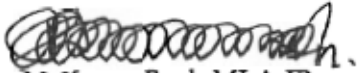
The Water Authority is no stranger to me, during the period of time I spent on the back benches I have followed its progress from inception to its present position of operational strength. It is the one project that has generally received the support of all Governments; I fully supported it during my period in the opposition and I will continue to do so during my period in Executive Office.

There were times during the last Government's period of office when it appeared that there was a move afoot to sanction the sale of the Authority to Cayman Water Company. I do not think that this was the policy of the Member with responsibility, but he may well have been under considerable pressure from those of his colleagues who supported this move and that is why no clear message was given to the potential buyers that the Water Authority was not for sale. I have a very firm view that the Water Authority must remain as it is, owned by Government, but operating as a proper business. In this way the rights of the people will be maintained and a water supply monopoly will not be created. The present position gives us the best of both worlds, two water supply entities, in comparative competition, where the private and public sector keep each other honest, a situation that can only benefit the consumer. I know that the Water Authority was very concerned about the fact that it did not know what Government's intentions were, so much so that much productive energy was being invested in fighting battles that may not have really existed. It appeared to me that this was not right and was not in the best interests of the country or the Water Authority, therefore one of the first things that I did was to send a very clear message, to any potential buyers, that the Water Authority was not for sale. This message obviously got through, as not long after it was given, Cayman Water Company withdrew its offer to purchase the assets of the Authority.

As a member of the Authority I have always been most supportive of the policy to educate and train our local staff. It is very encouraging to see the desire on the part of the staff to become properly trained, I believe they see the advantages and the career prospects within the Authority. We now have Troy Whittaker returned with his Bachelors in civil engineering, we will be supporting him in his attempt to obtain a Masters next year, we have Tony Reid and Clement Reid both away reading for their Bachelors in civil engineering. When these young men return there will be good career opportunities for them in the Authority.

I am pleased to report that the Water Authority has a good social conscience and is supportive of our local sports and other social programmes. During the year they were able to sponsor the junior football league so that it could continue in the year. The Bodden Town junior football league was also assisted as was the Netball Association, the Dance Group and many more smaller sports or community affairs. It is important that we continue to offer our support to the young people of this country who are making a positive effort in the right direction. I congratulate them and their older organizers.

Finally may I take this opportunity to thank the outgoing Chairman, Mr Derek Wight, his Board members and the staff of the Authority for the excellent job that they did in ensuring that the Authority had yet another successful year to report.



McKeeva Bush MLA JP
Member, Health and Human Services

Chairman's Report

The Year 1992

1992 was a landmark year for the Water Authority. Growth in the water supply sector continued at a pace equivalent to previous years with the continuation of the pipeline extension east of Spotts Newlands. By the end of the year water had reached as far as Northward Prison. The effect of this was to provide Government with a considerable cost saving and to satisfactorily address the issue of the prison's high water costs, that has been raised by successive Governments; it is anticipated that the prison will now save in the region of \$200,000 per annum on water purchase alone, in addition there will also be savings in the cost of electricity previously used to pump water from the cisterns. Regrettably the provision of piped water to the prison has further eroded the water trucker's share of the market and for this, myself and my fellow Board Members are sympathetic to those affected businesses. Unfortunately progress always has a price tag and it is never possible to effect change without some pain. I can only say that during its life the Authority has always been cognizant of the water truckers' needs and has always striven to satisfy their demand. Satisfying this demand is not easy, particularly during the peak season, when we are faced not only with satisfying a high pipeline demand but are required to meet a large trucked demand which involves providing a household's monthly or more demand in one go. It would be good to know that the truckers appreciate the efforts made on their behalf by the Water Authority.

Cayman Water Company also commenced on the West Bay Water Supply, by the end of the year good progress had been made and the majority of the district of West Bay had access to a piped supply of water.

The West Bay Beach Sewerage system saw some significant repair work and upgrading in the year. In this respect the pump station and manhole concrete repairs were completed as was the replacement and upgrading of the pump station control panels. It was very satisfying that we were able to complete this repair and upgrade from recurrent revenue. For me the highlight of the year was the arbitration case which we brought against the American consultants, Camp Dresser and McKee, who advised on the design and assisted with the supervision of the West Bay Beach Sewerage project. The Authority's view was that the problems that we experienced on the sewerage system emanated from the lack of proper advice at design stage and poor supervision at construction stage. I sat through the twenty days of hearing and was most impressed with those members of our staff who were able to present our case with exact and professional records. During the course of the trial it became obvious to me that we are fortunate to have in our employ such able, dedicated and thorough professionals. The results of the arbitration were particularly pleasing as we won on all three counts of our claim, and will now have sufficient funds to complete the much needed repairs to the sewerage system.

The final investigation into the condition of the sewer lines commenced before the end of the year. It is being carried out by an American company that won the contract after competing with other specialized companies. The investigation revealed some significant damage to the 150mm lines but no significant damage to any of the other lines. This repair work will commence early in 1993. The financial statements show that the cost of the arbitration has made a large inroad into the annual profit; however, the 1993 accounts will reflect the settlement sum and will compensate for the reduced profit of 1992. It is obvious that the 1992 profit would have been greater than the previous years had it not been for the cost of the arbitration.

I would like to take this opportunity to congratulate the new Government on their convincing win in the 1992 General Election. I wish them success and good fortune and I am pleased that my fellow board members and myself have been able to present them with a Water Authority that has achieved much and that operates efficiently, effectively and in accordance with the principles set out in the law.

Finally I thank my fellow board members for their stalwart support and dedication, and I thank the staff of the Authority for their hard work and dedication to duty. May the Authority continue to prosper.



Derek B Wight
Chairman

THE PORTFOLIO OF
HEALTH AND HUMAN SERVICES

THE WATER AUTHORITY

1992 ANNUAL REPORT

1.0 GENERAL

The Water Authority completed its third year as a Statutory independent body and continued with its positive financial development.

1992 was another busy year for the Water Authority with expenditure on capital projects being over \$4.0 Million, the majority of which was invested in water supply development.

The repair, to the most seriously deteriorated concrete of the West Bay Beach sewage pumping stations and manholes, that commenced last year was completed in the beginning of this year. Although it is expected that additional manholes will require repair work at a later date when funds allow. Later in the year a contract was let to an American company, Madsen Barr, to carry out a close circuit televideo survey (CCTV) of the complete sewerage system and to repair those leaking pipelines that were previously known. The CCTV was completed by the year end and the leakage problem was far more serious than first anticipated. The leakage was limited to the 150mm and 100mm pipelines only, approximately 75% of these pipelines were found to be in need of repair. The repair work is to commence in the beginning of 1993, the cost of which greatly exceeds the original estimate.

As reported in the 1991 Annual Report, it was expected that the ongoing dispute between the Water Authority and Camp Dresser and McKee, the American consultant that assisted on the West Bay Beach project, would need to be resolved by litigation. This matter went to arbitration in November and was concluded in December. The Arbitrator's award was in favour of the Water Authority and a settlement sum in the high six figure numbers was awarded.

The work load of the Authority continued to grow during the year with a minimal increase in staffing. However the increase in activity resulted in the operations structure becoming more formal with the creation of gangs for specific duties. The previous system whereby operations staff members tended to share duties became a thing of the past, as the work load for specific tasks such as meter box installation and road reinstatement became sufficient to keep specialized gangs fully occupied.



Cathy Seymour, the Authority's Senior Draftsperson, sits in front of one of the new CAD work stations that have been purchased to complement the existing equipment.



Gelia Frederick, the Authority's Operations Scientist, works in the new part of the quality control laboratory. The new laboratory allows the proper separation of waste water testing and potable water testing

On the staff front the thrust to fully Caymanize the Authority continued, with two more young Caymanian commencing engineering degree courses in Florida. The present Director's contract was renewed for one further period, at the end of which it is intended that the present Caymanian Deputy Director will take over. At the end of the year, of the thirty-seven employees, only five were expatriate.

Two of the buildings at Red Gate Lane were altered to improve the efficiency of the operation. The old RW2 building was modified to provide a fully equipped workshop, tool store and an office for the Senior Superintendent and Water Supply Superintendent. The Laboratory was expanded into the Senior Superintendent's former office and a small part of the store. The materials store was altered so as to provide a secure location.

The Authority continued to upgrade its vital computer system with the implementation of the network system and the addition of several new work stations. A number of old computers were replaced by up to date equipment with the ability to perform quicker and better. Keeping abreast of technology in the computer business is very necessary in order for the Authority to make the best use of its staff and to restrict the growth of its work force.

Eight board meetings were held during the year.

The members of the Authority at the 31st December 1992 were:

Chairman	Mr Derek B Wight
Members:	Deputy Financial Secretary Mr Woodward Terry B.Sc. LL.B. JP Attorney-at-Law Principal Secretary, Communication, Works and Agriculture Mr Kearny Gomez MBE Chief Environmental Health Officer Mr Walling Whittaker B.Sc. Mrs Betty Baraud Mr McKeeva Bush MLA JP Mr Harry Chisholm JP Mr Richard Flowers Mr Brainard Watler Mr Otto Watler
Secretary:	Director, Water Authority Mr Richard Beswick C Eng FICE FIWEM MASCE



Bodden Town Under Sixteen Football Club received sponsorship from the Water Authority. They are a well run group of young people whose organizers put much emphasis of team spirit and discipline. They had good results during the year and benefitted from their three match tour in Jamaica.



These enthusiastic young footballers are some of the three hundred youngsters who competed in the under twelve and under fourteen Junior Football League that was organized by the Football Association and sponsored by the Water Authority.

2.0 ADMINISTRATION AND FINANCE

2.1 Finance

1992 was the third year of statutory independence; the financial statements and explanatory notes are located at the end of this report.

For the financial year ending 31 December 1992, the Authority was able to achieve an operating profit of \$982,465; however, this amount was reduced to \$740,448 because of an expenditure of \$242,017 incurred on the arbitration case with Camp, Dresser & McGee (see note 12).

1992 water sales increased by 17.22% over 1991, whereas the customer base increased by 22.5%. Volume of sales increased by 11.62%. The cost of water increased by 16%. Sewerage fees were up by 6.76% with only a slight increase in customer base of 3.03%. Miscellaneous Revenue and Charges show a decrease of 33.78% due to a reduced volume of agency work carried out on private property.

Administration expenses increased by 32.04% in 1992 compared to 1991. This significantly increased was due to new expenditure for employee health insurance and the payment of office rent.

Increase in operating expenses was off set with a decrease in loan interest expense. This decreases was due mainly to the decrease in interest rates worldwide and to our refinancing efforts during 1991.

Our cash position at year end increased significantly but not sufficiently to cover our current liabilities. However, it did put the Authority in a good position to start 1993, at which time we will have to accumulate a higher cash reserve to begin principal repayments of the CIBC loans in 1994, in addition to recurring interest payments.

During the year, a further \$2,247,016 was borrowed from the Canadian Imperial Bank of Commerce to finance phase two of the expansion of our water supply to Bodden Town.

The Authority's return on capital employed was 7.8% for 1992 (1991: 10.05%). The asset base increased by 14.45% whereas the operating profit actually decreased by 12.1% (before interest and exceptional item). The capital expansion to Bodden Town has increased our asset base. The additional area of supply is less densely populated, therefore gave a substantially smaller return. This had the effect of lowering our overall return an capital employed. However, the long term forecast is an increasing return on capital employed.

2.2 Water Authority Assets

At the year end the Authority's total assets stood at \$25,573,642. During the year \$4,003,725 was invested in capital projects, mainly for the expansion of the water supply system to Bodden Town. An amount of \$3,410,974 was expended on phase one and \$429,094 was spent on supplies for phase two at the year end (see note 5).

An amount of \$348,533 was spent on the enhancement of the West Bay Beach sewerage system (see accounts note 5). A process which we feel will significantly decrease operating cost and increase the efficiency of the sewerage operations. This project is scheduled to be completed in early 1993.

2.3 Staffing

The staff complement as at 31st December 1992 was as follows:-

Director	Mr R Beswick C Eng FICE FIWEM MASCE
Deputy Director	Mr F McTaggart BSc
New Works Engineer	Mr T van Zanten MSc Eur Ing
Resident Engineer	Mr H van Genderen MSc
Graduate Engineer	Mr T Whittaker BSc
Clerk of Works	Mr R Thompson
Trainee Engineer	Mr B Whittaker As
Senior Draughtswoman	Ms C Seymour As
Draughtsman	Mr G Welcome
Operations Technician	Mr C Reid
Accountant	Mr R Daije BA
Assistant Accountant	Ms J Nicholas
Cashier	Ms G Powery
Clerical Officer	Mrs B Webb
Customer Relations Officer	Mr N Chisholm
Connections Officer	Mr C Morgan
Meter reader	Mr J Ebanks
Meter reader	Mr A Archibold
Meter reader	Mr N McField
Superintendent, Cayman Brac	Mr B Banks
Executive Officer, Cayman Brac	Mrs K Lazzari
Operations Scientist	Ms G Frederick BSc
Laboratory Technician	Mrs B MacAree BSc
Water Resources Supervisor	Mr V Rankine
Water Resources Technician	Mr D Powery
Senior Superintendent	Mr T Hill Master Plumber
Water Supply Superintendent	Mr E Conolly
Operator	Mr L Tivy
Operator	Mr W Watler
Operator	Mr S Campbell
Mechanic	Mr B Martinez

Foreman	Mr V Whittaker
Asst. Operator	Mr C Ramoon
Asst. Operator	Mr D Manderson
Plumber	Mr D Myles
Labourer	Mr V Grant
Labourer	Mr R Cubas

The following staff movements took place during the year:-

Mr Randal Daije joined the Authority as Accountant.

Mr Robert Thompson joined the Authority as Clerk of Works.

Mr Danny Manderson joined the Authority as Assistant Operator.

Mr Norman McField joined the Authority as a meter reader.

Mr Vernon Whittaker joined the Authority as Gang Foreman.

Mr Noel Chisholm joined the Authority as Customer Relations Officer.

Ms Barbara Webb joined the Authority as Receptionist/Secretary

Ms Juliette Nicholas was promoted from Executive Officer to Assistant Accountant.

Ms Gladys Powery was promoted from Receptionist to Cashier.

Mr Elvet Conolly was promoted from Water Supply Operator to Water Supply Superintendent.

Mr Sam Campbell was promoted from Assistant Operator to Operator-Sewerage.

Mr Anthony Archibold was promoted from Assistant Operator to Meter Reader.

Mr B Whittaker was promoted from Engineering Technician to Trainee Engineer.

Mr Brian Martinez's post was changed from Operator to that of Mechanic.

Ms Hannah Carter, the Accountant, left the Authority and returned to Government.

Mr Paulino Rodrigues, Graduate Research Assistant, left the Authority to spend time at his UK University to write up his thesis.

Mr Wade Tamasa, Meter Reader, left the Authority.

Ms C Levey, Customer Relations Officer, left the Authority

Ms Emily Arias, Cashier, left the Authority

Ms Rennee Connolly, Receptionist, left the Authority

Mr Windell Steele, Labourer, left the Authority.

Mr Clement Reid returned to the Authority from FIT to obtain intensive tutoring in mathematics and physics so that he could return to FIT better equipped to continue with his Bachelors Degree.

The post of Graduate Research Assistant was abolished and its funds were put towards the post of Hydrogeologist.

2.4 Awards

The Chairman's Award was given to Juliette Nicholas, who is the Assistant Accountant and has been with the Authority from its very early days.

2.5 Training

Support for the training of local staff continues to be an important activity of the Authority. Local staff are motivated to participate in local and regional seminars and workshops. Full time education overseas is also encouraged.

The Water Authority completed its seventh year membership of the Caribbean Basin Water Management Project, a training programme for water utilities funded by CDB and CIDA. Participating utilities are required to contribute to the programme. The Authority contributed US\$6,054.00 in 1992. At the end of 1992 CIDA's and CDB's financial support of the Project ended. In 1993 the participating utilities are planning to continue on their own with institutional support from the Caribbean Environmental Health Institute in St. Lucia. The Authority participated as follows in five CBWMP sponsored workshops:

- B MacAree from the Water Authority and L Gunby from the Environmental Health Unit attended a one week workshop on Drinking Water Quality Control in Jamaica.
- T Hill attended a one week course on Occupational Health and Safety in Water and Wastewater Operations in Trinidad.
- R Daije and J Nicholas attended a one week workshop on Office Supervision in Water Utilities in Grenada.

- H-J v Genderen attended a one week special seminar on the Kent Datalogger in Puerto Rico.

- P Samuels from the Social Services Department and C Linwood from the Personnel Training Unit attended a one week course on Training of Trainers in Anguilla.

Other training received by the Water Authority staff was as follows:

- E Conolly participated in the first module of the Supervisory Job Management Skills Course being offered by the Personnel Training Unit (PTU). This course will resume and be completed in 1993.

- Beginning January 1992, C Reid was tutored by T v Zanten in Physics and Calculus until the end of the year. His end of the year report from his tutor was good and as a result C Reid will resume his studies at Florida Institute of Technology (FIT) for a Bachelor of Science Degree in Civil Engineering in 1993. He is sponsored by the Cayman Islands Government.

- A Reid is in his second year at FIT studying for a Bachelor of Science Degree in Civil Engineering. He is sponsored by the Cayman Islands Government.

- G Frederick attended a one day Trainer Workshop for departmental trainers held by the PTU.

- T Hill and G Frederick attended a one day workshop presented by the Chamber of Commerce on the Employee Assistance Programme and how it may be utilized.

- All Authority personnel who use the radio communication system received a one hour training session on Radio Etiquette. The purpose of this exercise was to improve the use of the radio communication system.

2.6 Drawing Office

The survey and drawings were completed for the second phase of the Pease Bay Water Supply Project. These drawings were completed using the CAD system to which an additional work station was added.

As-built survey and drawings were completed as the project progressed.

The drawings for the laboratory and RW2 building conversion were completed.

Work continued on the drawings for the standard sewerage and sewage treatment works specifications.

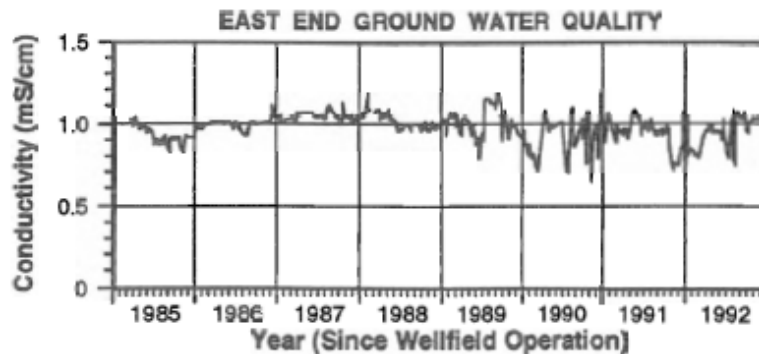
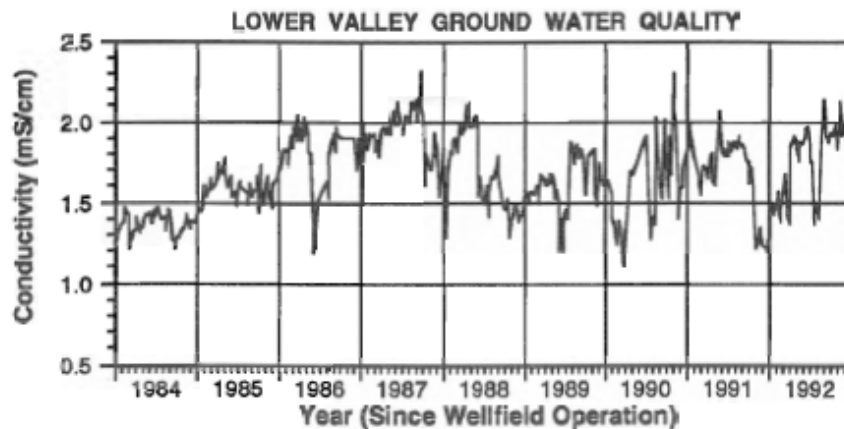
Carried out pre-contract photographic survey of Pease Bay extension area.

Drawing office staff became involved in the measurement of work carried out by the contractors to facilitate easier updating of as-built drawings.

3.0 WATER RESOURCES

3.1 Ground Water Monitoring

In Lower Valley and East End, hydrogeological monitoring network comprises observation wells, piezometers, and water level recorders. The monitoring programme has been in operation since 1984 in Lower Valley and 1986 in East End. Ground waters produced from the wellfields have fairly consistent salinities (see figures below) and are within the World Health Organization Drinking Water Standards. Average electrical conductivities of the Lower Valley and East End waters in 1992 were 1.75 mS/cm (1000 ppm TDS) and 0.9 mS/cm (550 ppm TDS) respectively. The fluctuation of water salinity generally coincides with the seasonal rainfall and tidal patterns, and to a lesser extent, the abstraction rate.



3.2 Water Resource Licensing

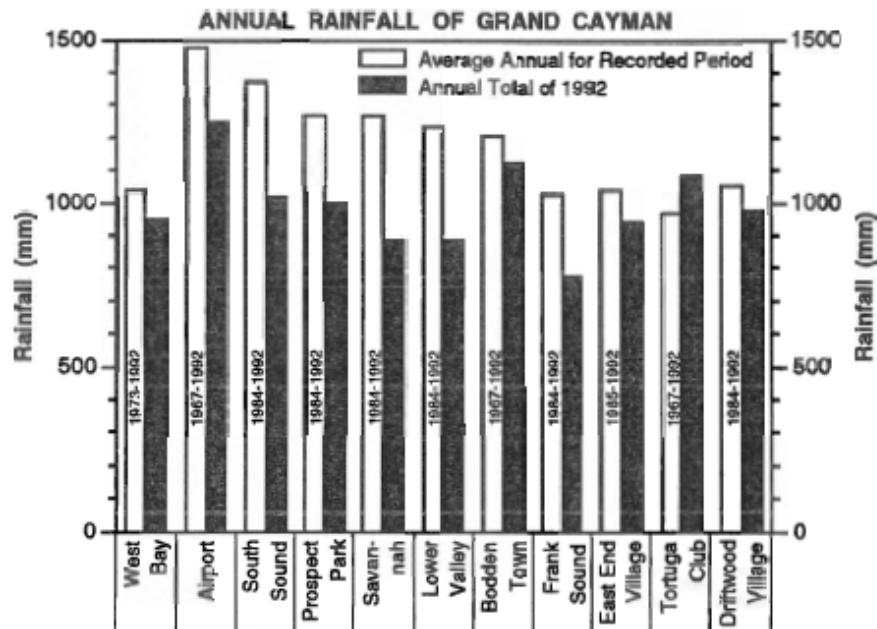
In compliance with the statutory obligation, the Authority approved the following permits:

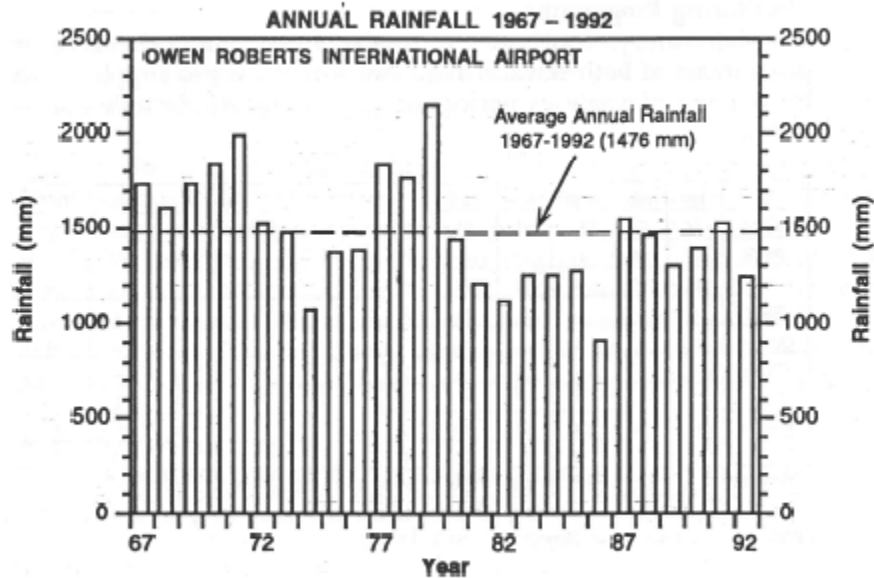
Discharge Permit	602 No.
Quarry Permit	2 No.

The revenue from granting discharge permits is collected by the Planning Department although the Authority is responsible for the issuance of permits. The Authority continued to monitor the ground water conditions in areas where large scale abstractions were carried out.

3.3 Rainfall Distribution

The eleven primary rain gauge stations show that rainfall is irregularly distributed on Grand Cayman and varies from year to year. The eastern part is relatively dry because the prevailing easterly wind carries air moistures further to the west. In 1992 the island wide average was 988 mm (39 inches) which is significantly lower than the 1259 mm (50 inches) recorded in 1991. Rainfall record at the airport shows that rainfalls in the last 12 years are close to or below the average annual of 1476 mm (58 inches).





4.0 QUALITY CONTROL AND RELATED MATTERS

4.1 Laboratory

The laboratory received a major facelift in late 1992 when an additional 24 sq m (260 sq ft) was made available. This resulted in less cramped work areas and provided for the safer use of equipment. The major piece of equipment purchased in 1992 was a Boekel Model 13200 incubator. This equipment has expanded the capability of the laboratory to handle bacteriological samples.

The major activities of the laboratory continue to be:-

- Quality control of the George Town, Lower Valley, East End and Cayman Brac Water Supplies;
- Monitoring of the Lower Valley and East End water resources;
- Research and monitoring of the West Bay Beach sewerage system and sewage treatment works;
- Providing the public with laboratory services for water analyses; and
- Development and implementation of training programmes.

The laboratory continued to support two research projects, one of which was completed in July 1992.

Monitoring Programmes

The laboratory continues to operate its comprehensive monitoring programme of both sewage treatment and the water supplies. The monthly breakdown of analyses performed as per the Authority's operation are as follows:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
STW	44	63	63	51	71	84	90	80	111	77	84	97	
PWS	57	46	64	45	61	45	59	55	51	66	37	60	
LVW	12	16	40	10	13	9	15	12	12	43	11	10	
EEW	4	5	4	5	11	8	7	10	13	9	4	8	
Queries	6	4	2	3	3	7	2	10	12	5	5	14	
CBWS	6	7	6	6	6	5	5	5	4	6	5	5	
Govt	0	1	9	0	0	0	0	0	3	4	1	0	
Marine	17	17	34	27	20	17	23	32	27	34	23	34	
Private	9	8	10	8	14	4	11	13	9	15	11	9	
TOTAL	155	167	232	155	199	179	212	217	242	259	181	237	2435

STW: sewage treatment works; PWS: piped water supply; LVW: Lower Valley wellfield; EEW: East End wellfield; CBWS: Cayman Brac Water Supply.

The Authority's operations include the piped water supply, queries, sewage treatment works, the East End and Lower Valley wellfields, and Cayman Brac water supply. These operations accounted for 75% of the samples analyzed by the laboratory in 1992 while research activities accounted for about 7%. Analyses carried out for various Government departments made up 13% of samples analyzed. The remaining 5% of samples were private requests from the public.

Piped Water Supply

Monitoring of the distribution system continued with regular testing of chlorine residual, total and faecal coliform bacteria, conductivity and total dissolved solids (TDS) at specific sampling points. Two additional points were added as the pipeline was extended eastwards. TDS of water supplied to the reservoirs and the TDS plus chlorine residuals of water entering the distribution system were measured twice daily.

The free chlorine residuals entering the distribution system averaged 0.18 mg/l, while the pH averaged 7.60 units and the TDS averaged 113 mg/l. The zinc level in the water averaged 0.32 mg/l. Daily analyses of total and faecal coliform in the water entering the distribution system show nil throughout the year.

The laboratory received and attended to a number of queries from customers. Written reports were provided to customers, and where necessary, the customer was advised on what action to take regarding problems encountered on the customer's side of the meter box.

In September the Authority ceased using soda ash (sodium carbonate) as a pH adjuster and switched to sodium hydroxide solution which is food grade and FDA approved. This has resulted in better pH control and less time spent mixing chemicals.

Due to the low alkalinity and aggressiveness of the desalinated water, problems of corrosion were experienced with metal fittings. Late 1991 the Authority began adding a corrosion inhibitor, zinc orthophosphate to the piped water supply. This chemical is food grade and FDA approved for treatment of drinking water supplies. Improvements have been noted in that there were less complaints regarding discoloured water caused by metal corrosion. The level of inhibitor is carefully monitored and kept below that allowed by the World Health Organization Drinking Water Guidelines.

Cayman Brac Water Supply

Quality control monitoring of the Cayman Brac Water Supply continued with daily analyses of TDS, chlorine residuals and corrosion inhibitor. Weekly samples for bacteriological analyses were sent to the Authority's laboratory in Grand Cayman.

Sample taps within the distribution line are monitored once monthly. The free chlorine residual of water entering the distribution system averaged 0.22 mg/l, while the pH averaged 7.60 units and the TDS averaged 410 mg/l. The zinc concentration in the water averaged 0.64 mg/l.

Lower Valley Domestic Wells

In the Lower Valley area, thirty-three domestic wells were routinely tested for bacteriological content and total dissolved solids concentration. These analyses are carried out once during the dry season and repeated during the wet season. The following are the results of this monitoring:

	Percentage of Total Coliform Bacteria ≥ 10 cfu/100ml	Percentage of Faecal Coliform Bacteria > 0 cfu/100ml	Percentage of Total Dissolved Solids ≥ 1000 mg/l
Dry Season (March 92)	28.0	22.0	3.0
Wet Season (October 92)	30.0	30.0	0

East End Observation Wells

The Authority monitors five observation wells scattered on the periphery of the East End lens. Two wells are in the brackish water zone. The following are the results of the bacteriological testing for these wells:

	Percentage of Total Coliform Bacteria ≥ 10 cfu/100ml	Percentage of Faecal Coliform Bacteria > 0 cfu/100ml
Dry Season (March 92)	20.0	20.0
Wet Season (October 92)	not done	not done

Sewage Treatment Works

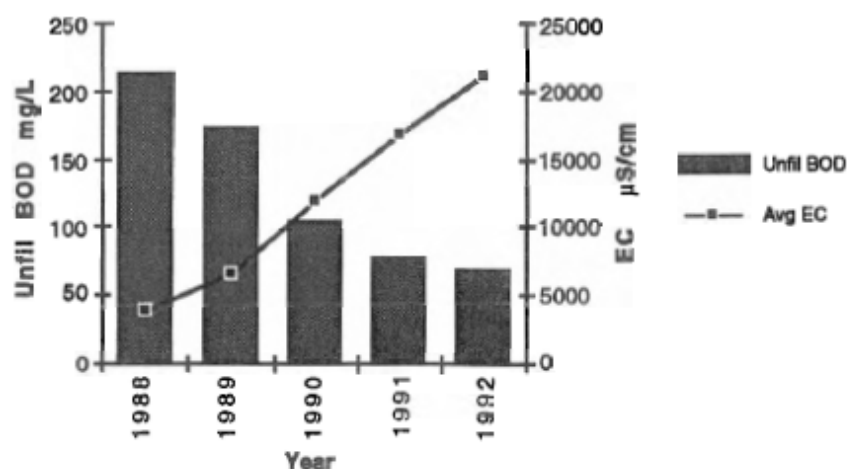
Monitoring of the sewage treatment works continued on a weekly basis up until July and from then on a fortnightly basis.

The following is a summary of the operational performance of the sewage treatment works since commissioning:

Year	Average BOD-5 mg/l			Average FC cfu/100ml			Average EC μ S/cm
	Raw sewage	Final effluent	% reduce	Raw sewage	Final effluent	% reduce	Raw sewage
1988	213.0 (g)	13.0 (g)	94.0	4.39×10^6	1.68×10^3	99.962	3787 (g)
1989	174.0 (g)	36.0 (g)	80.0	1.62×10^8	2.87×10^3	99.998	6551 (g)
1990	103.5 (c)	25.4 (g)	75.0	3.18×10^8	7.30×10^3	99.998	11955 (c)
1991	76.4 (c)	20.8 (g)	73.0	2.77×10^6	1.55×10^4	99.440	16749 (c)
1992	68.9 (g)	19.6 (g)	71.5	1.52×10^6	5.84×10^3	99.616	21282 (c)

note: BOD = Biochemical Oxygen Demand; FC = Faecal Coliform Bacteria; cfu = colony forming units; EC = Electrical Conductivity; g = grab sample; c = 24hr composite sample.

The graph below compares the conductivity and BOD of the raw sewage from the time the system was first commissioned to 1992:



The BOD reflects the influence of dilution due to saline ground water infiltration into the sewers. Consequently, the BOD of the raw sewage decreased as the electrical conductivity increased. It is estimated that ground water infiltration accounted for about 40% of the salinity and flow to the treatment works. The BOD results presented here reflect only the first six months of 1992. The laboratory was unable to carry out BOD analysis due to equipment damage from flooding in August. Additionally, collection of composite samples was not possible since August due to equipment malfunction and difficulties in obtaining parts from overseas.

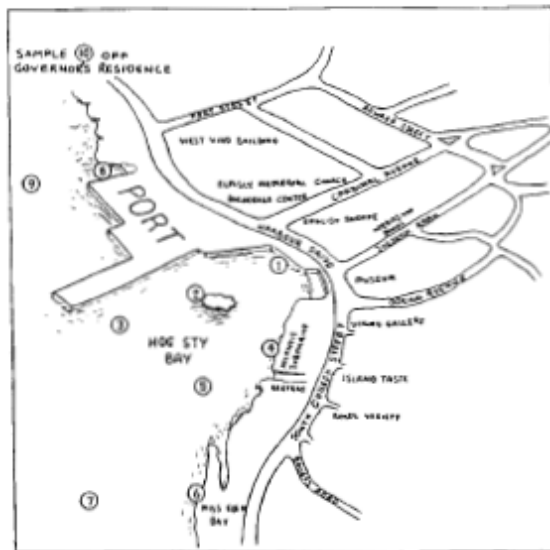
Generally the stabilization ponds performed as expected despite the problems associated with the elevated salinity and hydraulic overloading of the system.

Weekly monitoring of the electrical conductivity at eleven sewage pumping stations continued. The results continued to show where the major leaks were to be found.

Hog Sty Bay Monitoring Programme

The monitoring programme commenced in February 1991 as part of an interdepartmental agreement between Natural Resources and the Water Authority. Although the results for the first year showed no significant pollution, the programme was continued in order to observe trends.

The location of sampling points are indicated on the map below. Each sampling point represents a subsurface (1m deep) and a bottom sample except for numbers 1, 6 and 8 at which only one sample is taken.



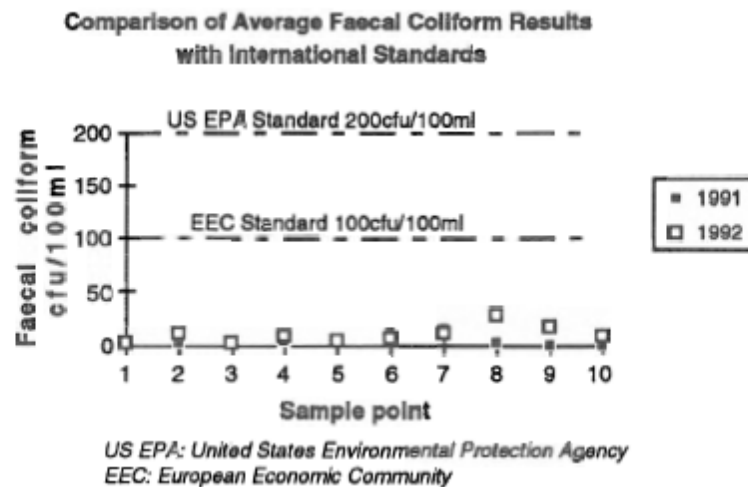
Hog Sty Bay Coastal Monitoring
Location of Sampling Points

Faecal coliforms and enterococci bacteria are analyzed because they are universal indicators of sewage pollution. Of these, enterococci are considered the best bacteriological indicator of domestic wastewater pollution and health risk to bathers. The table below shows the average faecal coliform and enterococci density of all the sampling points:

Year	Average Faecal Coliform cfu/100ml	Average Enterococci cfu/100ml
1991	1.9	3.2
1992	9.8	2.4

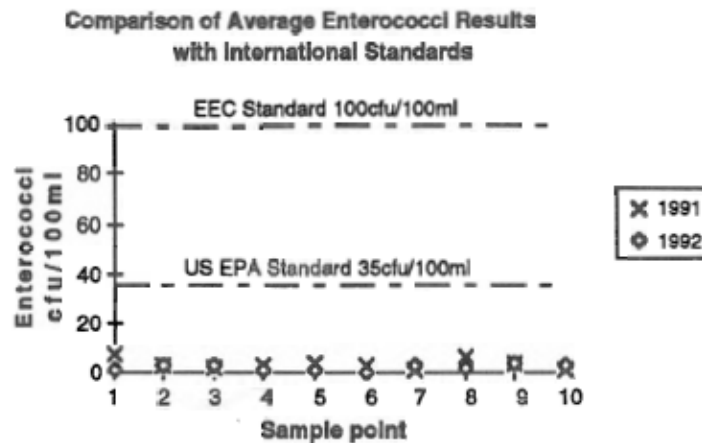
There is an increase in the average faecal coliform densities since 1991. The highest average for faecal coliform was 27cfu/100ml at sampling point 8. There has been little change in the average enterococci densities since 1991. The highest average for enterococci was 3.5cfu/100ml at sampling point 9. Both bacteriological parameters were within the normal range for tropical sea water.

Below is a graph comparing the average faecal coliform densities over the last two years with international standards for sea bathing water quality.



It can be seen from the graph that the faecal coliform of the marine water around Hog Sty Bay is well within the standards recommended by the international community for bathing water quality. It is noted from the graph that the faecal coliform averages at sample points number 2, 8, 9 and 10 are higher in 1992 than in 1991.

The graph below compares the average enterococci coliform densities over the last two years with international standards for sea bathing water quality.



The above graph clearly shows that enterococci bacteria densities in the marine water of the Hog Sty Bay area is much lower than the recognized international standards.

Concern has been expressed by various parties regarding the white suspended matter that appears to be coming out of fissures in the sea wall parallel to Harbour Drive. This matter was microscopically examined by the Natural Resources Unit and Water Authority and not found to be "toilet paper" as is commonly thought but is dead filamentous algae that detaches from the sea wall as it dies. The NRU has undertaken to have this algae identified as to species.

The Water Authority and NRU will continue this monitoring programme.

4.2 Research

G Frederick continued her collaborative PhD with the University of Surrey following approval from the Public Service Commission. Her Supervisor Dr B Lloyd visited once during the year to monitor and advise on the progress of the research. Ms Frederick was unable to carry out experimental work during the last five months of 1992 due to unforeseen circumstances. As a result experimental work programmed for 1992 was not completed. During the first five months of the year she carried out bench scale laboratory experiments to determine the feasibility of using bacteriophage as tracers in the waste stabilization ponds in order to study the retention time. She expects to complete her experiments by August 1993.

P Rodrigues, the graduate research assistant continued with his fourth year of research. His data collection was completed in July 1992 and he returned to Loughborough University in November 1992 to write up his thesis.

4.3 Conferences, Papers and Reports

Conferences

The Proceedings of the Twentieth Caribbean Water Engineers' Conference held in December 1991 were published. Several papers pertaining to work carried by the Water Authority are included in the Proceedings.

Papers

Ng, K.-C., Jones, B. and Beswick, R.G.B. 1992. Hydrogeology of Grand Cayman, British West Indies: a karstic dolostone aquifer. *Journal of Hydrology*, v. 134, p. 273-295.

5.0 WATER SUPPLY - OPERATIONS

5.1 Lower Valley Wellfield Facility

The Lower Valley wellfield has completed its ninth full year of production (1984-1992). As illustrated in the following table, 1992 showed an increase in the demand for the Lower Valley ground water because of the extreme dry summer season. The abstraction was maintained at a low rate to prevent drawdown of the water table. The total quantity of ground water produced since commencement of the wellfield operation is 467,941 Cub m (123,630,012 US Gallons).

Year	Hours Run	Average Pumping Rate (Cub m/hr)	Quantity Produced (Cub m)	Monthly Production Max (Cub/m)	Monthly Production Min (Cub/m)	% Loss	Rate of Power Consumption (KwH/Cub m)	Quantity Sold (Cub/m)
1986	6,810	8.68	59,146	7,033	2,386	7.94	2.03	55,718
1987	8,421	7.15	60,159	5,459	3,965	4.94	2.28	57,744
1988	7,884	6.16	48,564	4,770	2,692	5.60	2.35	45,989
1989	6,946	7.08	49,177	5,504	2,148	5.38	2.33	48,256
1990	6,835	6.70	44,480	5,380	2,088	8.79	2.33	44,944
1991	6,822	6.40	43,685	4,472	2,689	11.00	2.50	39,584
1992	8,082	6.23	50,315	5,489	3,155	6.72	2.73	44,965

5.2 East End Wellfield Facility

The East End wellfield has completed its seventh full year of production (1986-1992). As shown in the table below, the demand for the East End ground water in 1992 was low. The wellfield was operating at about 13.5% of its capacity. The significant increase in water lost was due to breakage on the main line, which had been rectified. The total quantity of ground water produced since commencement of the wellfield operation (March 1985-1992) is 213,523 Cub m (56,412,777 US Gallons).



Elvet Conolly, the Authority's Water Supply Supervisor, stands at the door of the Senior Superintendent's new office which is located in the revamped RW2 building. The other part of the building has been converted to a fully equipped work shop, tool and spare part store.



Brian Martinez, an Operator, using a hydraulic jack hammer to excavate a trench to lay a supply line across a road, whilst Walt Watler, the machine operator works the JCB excavator hydraulic controls.

Year	Hours Run	Average Pumping Rate (Cub m/hr)	Quantity Produced (Cub m)	Monthly Production Max (Cub/m)	Min (Cub/m)	% Loss	Rate of Power Consumption (KwH/Cub m)	Quantity Sold (Cub/m)
1986	603	14.72	8,877	1,760	339	1.03	0.46	4,191
1987	2,712	14.00	37,973	6,401	1,244	1.37	0.47	29,263
1988	3,134	14.00	43,879	7,183	529	1.36	0.45	33,815
1989	3,440	16.50	56,928	11,293	954	1.05	0.40	57,973
1990	1,310	14.81	19,408	2,624	952	1.00	0.43	19,704
1991	1,816	15.11	27,438	4,203	1,097	4.55	0.45	26,323
1992	1,182	13.16	15,546	2,595	305	13.90	0.44	11,653

5.3 Cayman Water Company

The water sales of Cayman Water Company for 1992 were higher than 1991. The following table indicates the performance of their various operating parameters and compares them to 1991.

	1992	1991	Variance 92 to 91
Water Produced (US Galls)	201,343,337	180,189,000	11.74%
Total Water Sold (US Galls)	172,497,101	157,998,373	9.18%
Pipeline Sales (US Galls)	166,667,081	152,313,323	9.43%
Truckers Sales (US Galls)	5,820,020	4,960,870	17.32%
Other Sales	0	3,518,436	NA
Average Fuel Adjustment Factor	\$0.68	\$0.46	47.01%
Average Water price pipeline (1000 US Galls)	\$18.13	\$17.91	1.23%
Average Water price trucker (1000 US Galls)	\$15.68	\$15.46	1.42%
Total Royalty Payment	\$222,460.57	\$205,763.41	8.11%
Unaccounted for Water	14.26%	12.80%	1.47%

5.4 Water Truckers

The following companies continue to provide a trucking service:-

H.A. Bodden	Eden's Water Service	Wilford Ryan
C.L. Flowers and Sons	Thompson Water Services	Brasely McLean
Cito Water Service		

Five companies drew water from East End, five from Lower Valley, all seven from George Town reservoir and one from two private wells situated on Walkers Road. The quantities (US Galls) are as follows:

	1990	1991	1992
Water Company	7,295,400	4,960,870	5,820,020
Lower Valley	11,864,799	10,305,359	11,879,727
East End	15,033,169	6,670,284	3,078,723
George Town Reservoir	14,797,234	16,634,772	18,248,822
Walkers Road	103,752	102,000	102,000
Other Sources	0	0	0
Total	39,094,354	38,673,284	39,129,292

This equates to an average daily trucked demand of 107,203 US Gallons, representing a nominal increase over 1991. It can be seen that the trucked demand has stayed fairly constant over the past three years and the increase in the public piped water supply appears not to affect the amount of water that is trucked throughout Grand Cayman.

5.5 George Town Water Supply

Although no large areas were added in 1992, the George Town water distribution system continued to grow steadily with the addition of 423 new customers from January to December 1992, an increase of 20%. This was reflected in a 23.9% increase in pipeline sales over 1991 figures.

Several small developments were connected to the public system through pipelines which were installed by their developers under Water Authority supervision. The installations costs were borne totally by the developer and the lines were turned over to the Authority for operation.

Central DeSal Ltd. continued to experience major problems with their plant and no satisfactory agreement had been reached at year end with respect to the re-negotiated agreement with that company. There were several times when the plant was taken off line for extended periods of maintenance. Whilst the major rehabilitation carried out in the early part of 1992 had some effect in the short term, the long term effects were not as positive as had been hoped and the plant is still unable to produce efficiently or anywhere near the quantity of water it was originally designed to do.

Ocean Conversions Ltd., formerly Reliable Water Cayman continued to provide a consistent supply of desalinated water throughout the year with no major plant breakdowns.

George Town Connections by Customer Type for 1992:

Month	Single Resident	Multi Resident	Commercial	Industrial	Public Auth	Truck	Total
Dec '91	2,148	57	295	1	46	18	2,565
Jan '92	2,193	55	297	1	46	18	2,610
Feb	2,223	57	296	1	46	18	2,641
Mar	2,280	57	301	1	46	18	2,703
Apr	2,298	59	320	1	47	16	2,741
May	2,374	59	315	1	49	16	2,814
Jun	2,422	59	321	1	50	16	2,869
July	2,438	59	332	1	51	18	2,899
Aug	2,478	59	338	1	51	15	2,942
Sep	2,533	59	344	1	51	18	3,006
Oct	2,573	59	360	1	51	17	3,061
Nov	2,621	57	365	1	51	17	3,112
Dec '92	2,647	56	370	1	51	17	3,142

1992 Average monthly consumption per Consumer Group (Cub m)

Month	Single Resident	Multi Resident	Commercial	Industrial	Public Auth	Total Pipeline	Trucker
Dec '91	10.81	95.49	37.44	97.60	75.48	16.99	645.60
Jan '92	18.55	149.43	54.40	164.90	135.87	27.57	1,271.93
Feb	12.29	104.30	41.43	221.20	93.15	19.07	873.56
Mar	16.72	146.40	52.99	543.40	122.98	25.56	1,064.11
Apr	15.15	145.33	46.29	176.30	83.55	22.86	1,685.58
May	14.98	112.19	42.04	193.20	83.55	21.34	1,256.43
June	14.65	118.29	45.79	195.10	85.76	21.61	544.23
July	13.90	115.64	41.08	164.00	69.07	20.15	469.94
Aug	13.78	105.93	41.25	154.50	71.71	19.87	779.43
Sep	12.08	95.65	33.94	179.60	61.62	17.15	336.79
Oct	11.97	99.81	39.51	158.50	63.61	17.84	361.44
Nov	14.20	111.47	41.72	91.90	59.30	20.00	619.80
Dec '92	12.75	100.63	39.95	110.95	57.47	18.30	897.11

Total desalinated water sales by Consumer Group (Cub m)

	1992	1991	1990	1989
Single Residential *1	412,367	332,432	322,373	183,054
Multi Residential	81,278	86,635		
Total Residential	493,645	419,067	322,373	183,054
Commercial	170,612	165,200	140,689	109,570
Industrial	2,356	2,351		
Public Authority	48,022	52,522	45,184	33,446
Truckers	69,072	62,963	62,768	29,553
Total	783,707	702,103	571,014	355,628

*1 From 1991 the multi-residential consumption, which includes single connections to apartment complexes, was separated out in the statistics to facilitate more accurate individual consumption data.

Unaccounted for Water

The average monthly unaccounted for water was 4.05% of the gross production, a reduction of 1.03% over 1991, with a high of 11.90% in December and a low of -9.65% in January. The high loss recorded in December and the negative loss in January results from the timing of the sales meter readings as compared to the production meters. The high loss was a result of the consumer meters being read earlier than usual, in the middle of the month, and the production meters at the end of the month.

Water Prices

The prices of water remained as the 1991 prices and are as follows:

Ground Water	\$2.00 per Cub m	(\$7.58 per 1000 US Galls)
Desalinated Water: Grand Cayman		
Residential first 12 Cub m per month	\$3.78 per Cub m	(\$14.32 per 1000 US Galls)
over 12 Cub m per month	\$4.54 per Cub m	(\$17.18 per 1000 US Galls)
Public Authority	\$4.10 per Cub m	(\$15.55 per 1000 US Galls)
Commercial	\$4.54 per Cub m	
Trucker	\$3.78 per Cub m	
Desalinated Water: Cayman Brac (all)	\$6.60 per Cub m	(\$25.00 per 1000 US Galls)



This truck contains the steam boiler and TV video equipment used to carry out the lining repair to some of the West Bay Beach sewerage. The lining material, inverted polyethylene piping, is spooled up on the trailer attached to the truck. This pipe is fed into the damage sewer in one continuous length between two manholes and inverted using steam pressure. It then forms a tight fit to the internal form of the sewer, thereby effecting the repair.



The water tanker and jet truck used by the sewer repair contractor to clean the sewers prior to inspection and repair. All repair sewers were TV inspected on completion of the repair to ensure that the repair was successful.

other clay or PVC lines, that were surveyed, showed any signs of damage. The original contract allowed for the repair of damaged lines that had been identified before the CCTV survey, unfortunately considerably more sewer lines were identified as in need of repair. Additional funds for this work were made available by the Authority and work on the repair was scheduled to commence early in January 1993.

The overall electricity consumption per cub metre of sewage stabilized during the year indicates that no significant increase in infiltration took place during the year. However the electricity consumption per unit volume of sewage in the collection system reduced, due to the replacement of a number of the pump impellers that were worn to the point where their efficiency was badly effected. Replacement impellers have been purchased for all the sewage pumps and those that have not yet been replaced will be fitted in early 1993. The new impellers were pre-treated with an abrasion and corrosion inhibitor to try and extent the life of the new impellers.

The stabilization ponds continued to operate under stress caused by the increased hydraulic loading and salinity from infiltration. It was necessary to run the aerators towards the end of the year in order to avoid odour problems. The remedial work that was proposed to be carried out to the sewage treatment works was not done and it is now anticipated that this work will be commenced and be completed towards the end of 1993.

Sewerage Statistics	1992	1991	1990	
Total Sewage Treated	1,291,623	1,225,277	801,831	Cubm
Average Daily Flow	3,529	3,357	2,197	Cub m
Number of Septage Loads	753	707	877	Loads
Pumping Stations Electricity	302,331	363,059	155,016	KwH
	0.234	0.296	0.193	KwH/Cub m
Treatment Works Electricity	186,800	161,240	104,400	KwH
	0.145	0.132	0.13	KwH/Cub m
Aspirators' Electricity	47,640	45,000	49,140	KwH
	0.057	0.037	0.061	KwH/Cub m
Total Electricity	0.416	0.465	0.385	KwH/Cub m
Total No. of Connections	238	231	232	
Total Sewerage Fee Charged	\$1,614,851	\$1,512,387	\$1,320,964	
Monthly Avg Cost / Connection	\$565.42	\$545.59	\$474.48	
Total No. of Septage Customers	5	4	4	
Total Septage Fee Charged	\$22,590	\$21,210	\$26,310	
Monthly Avg Cost / Customer	\$376.50	\$441.88	\$548.13	

6.3 Sewerage Rates

The sewerage rate system remains as it was in 1991 and is as follows:

Group	SFUs per Sq ft	SFUs per unit
Commercial		
Store	0.0275	
Office	0.0375	
Beauty saloon, surgery, bar, club, water sports	0.0475	
Food handling, garage, photo developing	0.0575	
Residential and hotels		
Residential bedroom		6
Residential bathroom		14
Hotel room		18
Rate per Sewerage Fixture Unit (SFU)	\$1.40 per month	

7.0 NEW WORKS

7.1 West Bay Beach Sewerage

A dispute between the Water Authority and the consultant Camp Dresser McKee, was settled by Arbitration towards the end of the year. The Arbitrator found for the Water Authority on all three heads of claim and awarded the Authority a sum of \$682,000 in damages and accrued interest.

7.2 George Town Sewerage

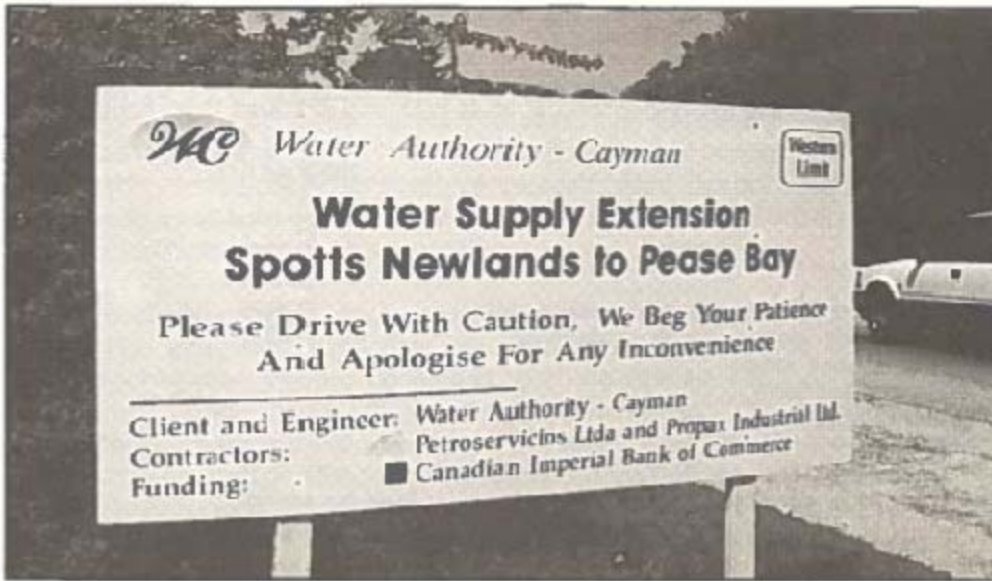
Proper sewage treatment and disposal remains a serious concern of both the Water Authority and the Environmental Health Department.

No additional work on the pre-feasibility study for a sewerage system for North and Central George Town was carried out this year.

The Water Authority continued to review the waste water treatment and disposal systems for all new development at the planning stage, with the exception of single houses and duplexes which are reviewed by the Building Control Unit. More than 125 new developments were reviewed in 1992. The Authority has commenced to write guidelines to assist developers in designing and constructing water supply, sewerage and sewage treatment works. It is hoped that in 1993 these guidelines will be completed and used by the Building Control Unit in the evaluation and approval of all development proposals.

7.3 George Town Water Supply

The civil engineering contractor, Petroservicios Ltda., commenced in early December 1991 with the extension of the water supply to Pease Bay. The first phase, from Spotts Newlands Road to Savannah Meadows, was complete by mid-October. The second phase, from Savannah Meadows to



The sign placed at the west end of the three phase Pease Bay water supply extension. The first phase was completed in the early part of 1992 and the second phase was very near to completion by the end of 1992. The pipeline reached Northward Prison by year end.



The water supply civil engineering contractor, Petroservicios, installing a valve system on the mainline in Savannah. Many such similar valving systems are incorporated in the distribution system so that individual areas can be isolated to allow repair or maintenance work without disturbing customers outside the area in which the work is being carried out.

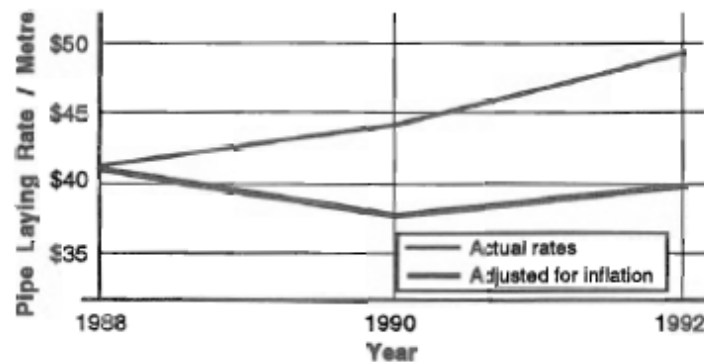
Northward, commenced immediately thereafter. By year end the contractor had completed the installation of the pipeline to Northward Prison.

The following areas were provided with piped water during the year:

- Within the existing distribution area: Remaining areas of Prospect, Omega Bay, Nightingale Crescent, North Sound Way, Maclendon Drive, Airport Industrial Park, Templeton and Jasmin Lane.
- Poinciana Drive: Spotts Newland Road to Northward Road, including side roads between Spotts Newlands Road and Lower Valley reservoir.
- Hirst Road, including all side roads.
- North Sound Estates.
- Castle Road: Tall Trees to Pedro Castle.
- Savannah Meadows, Savannah Acres and Savannah Heights.
- Northward Road.

In January a rate increase, calculated in accordance with the conditions of contract, was given to the civil engineering contractor. This increase averaged approximately 6.6% and equaled the cost of living increase over the preceding twelve months.

It is interesting to note that the average pipe laying cost per linear metre has only increased from \$41.02 in 1988 (original project) to \$43.32 in 1990 (extension to Spotts Newlands) and to \$49.56 in 1992 (1st and 2nd phase of the Bodden Town extension), an increase of 20.82% over the period from 1988 to 1992. This increase is well below the rise in inflation which over the same period was 33.30%. The 1992 increase in the average pipe laying rates is distorted by the higher percentage of large diameter pipe laid in the extension and the large quantity of rock encountered. It is therefore difficult to make meaningful comparisons but on the completion of the whole Bodden Town extension, where the size distribution of pipes laid will be more evenly distributed, it is anticipated that the average laying cost will be reduced significantly. The graph also shows the rates adjusted for inflation and it can be seen that the adjusted rate has actually reduced over the period.



7.4 Cayman Brac Water Supply

No further work was carried out to the Cayman Brac water supply, except the installation of a number of new connections.

7.5 West Bay Water Supply

On 21st January 1992 Cayman Water Company issued the Notice to Commence Construction of the West Bay Water Distribution system. Three months later on 21st April 1992, the contractor Kimmins from Florida commenced the work on the project.

The first four phases of the seven phase project were substantially completed by year end, and customers were supplied in the area covered by the first three phases. A total of 100,719 linear feet of pipe were installed, at an average cost of US\$21.56 per linear foot or CI\$59.42 per linear metre.

The project is expected to be completed in mid 1993.

8.0 WATER AND SEWERAGE OPERATORS

The Plumber's Examination Board approved the following licences in 1992:

	<u>1992 Licences</u>	<u>Total No. to 31st Dec 92</u>
Apprentice	10	47
Journeyman	1	89
Master	3	26

The Chairman of the Board continued to strengthen the series of teaching aids for plumbers and these were made available to the trade to assist with examinations and to upgrade the standard of plumbing on the Island.

The Plumber's Examination Board met on three occasions to assess applications and this year practical and theoretical examinations were held on three occasions to determine applicants' ability.

The Board consists of the following members:

Chairman	Senior Superintendent Water Authority (Mr T Hill)
Members	Chief Environmental Health Officer (Mr W Whittaker) Mr Nigel Miller Plumbing Inspectors (Mr A Arch, Mr G Feese)
Secretary and Member	Chief Building Control Officer (Ms M Cole)

Water Authority-Cayman

Financial Statements

Table of Contents

Certificate and Report of the Auditor General	Page 32
Balance Sheet	Page 33
Statement of Income and Expenses	Page 34
Statement of Cash Flow	Page 35
Notes to Financial Statements	Page 36-41



Water Authority of the Cayman Islands

CERTIFICATE AND REPORT OF THE AUDITOR GENERAL

*To the Members of the Water Authority
of the Cayman Islands*

I certify that I have examined the financial statements on pages 33 to 41 of the Water Authority of the Cayman Islands for the year ended 31st December 1992 in accordance with the provisions of Section 8 (7) of the Water Authority Law, 1982, Section 8(F)(1) of the Water Authority (Amendment) Law 1987, and Section 44(1) of the Public Finance and Audit Law, 1985.

In my opinion these financial statements give a true and fair view of the state of affairs of the Water Authority of the Cayman Islands at 31st December 1992 and of its operations for the year then ended. The financial statements have been prepared in accordance with the accounting policies set out in Note 2.

In rendering my certificate on the financial statements of the Water Authority of the Cayman Islands I have relied on the work carried out on my behalf by Ernst and Young (Chartered Accountants) who conducted their work in accordance with auditing standards generally accepted in the USA.

I have no observation to make on these financial statements.

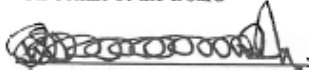
N. K. Esdaile
Auditor General

24th August 1993


Balance Sheet
As At 31st December 1992
(Stated in Cayman Islands Dollars)

	Notes	<u>1992</u>	<u>1991</u>
CURRENT ASSETS			
Cash on Hand		850	600
Cash at Bank		452,289	58,943
Accounts Receivable	3	648,379	584,910
Prepaid Insurance		9,365	0
Office and Lab Supplies		0	8,902
Total Current Assets		<u>1,110,883</u>	<u>653,355</u>
FIXED ASSETS			
Land	4	565,264	565,264
Water Supply System	4	12,958,147	9,345,987
Sewerage System	4	9,810,212	10,044,170
Tools and Equipment	4	66,160	74,839
Office Furniture and Equipment	4	115,590	93,608
Vehicles	4	169,759	114,346
Construction in Progress	5	777,627	1,136,118
Total Fixed Assets		<u>24,462,759</u>	<u>21,374,332</u>
Total Assets		<u>25,573,642</u>	<u>22,027,687</u>
CURRENT LIABILITIES			
Bank Overdraft		564,986	0
Accounts Payable		189,025	124,494
Contract Retentions Payable		208,468	0
Interest Payable	13	266,186	160,895
Customer Deposits		347,574	314,479
Current Portion Of Long Term Debt	6 & 13	562,537	414,099
Total Current Liabilities		<u>2,138,776</u>	<u>1,013,967</u>
LONG TERM LIABILITIES			
Loans Payable	6 & 13	21,306,377	19,775,854
Total Liabilities		<u>23,445,153</u>	<u>20,789,821</u>
Net Assets		<u>\$2,128,489</u>	<u>\$1,237,866</u>
Represented By:			
Reserve for Foreign Currency Fluctuations	7 & 13	(277,362)	(427,537)
General Reserve	13	2,405,851	1,665,403
Total Reserves		<u>\$2,128,489</u>	<u>\$1,237,866</u>

On behalf of the Board



McKeeva Bush, MLA, JP
Chairman



Richard G B Beswick
Director

See accompanying notes to the financial statements.

Water Authority-Cayman
Statement of Income and Expenses
For the Year Ended 31st December 1992
(Stated in Cayman Islands Dollars)

	Notes	<u>1992</u>	<u>1991</u>
INCOME			
Sales	13	5,857,570	5,134,923
Miscellaneous Revenue and Charges	8 & 13	302,299	456,536
Total Operating Income		<u>6,159,869</u>	<u>5,591,459</u>
EXPENSES			
<i>Administrative</i>			
Salaries		226,983	189,064
Staff Training and Benefits		88,013	56,498
Office and Lab Supplies		61,105	31,607
Licences and Dues		7,839	5,532
Telephone and Utilities		13,687	16,676
Office Rental	11	27,913	0
Insurance		48,688	33,381
Repairs and Maintenance		280	80
Bad Debt Expenses		11,580	766
Depreciation Expense	2	22,594	18,699
Miscellaneous		46,360	24,921
Total Administrative Expenses		<u>555,042</u>	<u>377,224</u>
<i>Operating</i>			
Salaries		537,233	377,355
Wages		143,836	104,769
Water Purchase		2,228,111	1,920,861
Repairs and Maintenance		61,795	43,632
Supplies		104,976	35,836
Electricity		144,591	109,297
Depreciation Expense	2	534,213	498,729
Lease Expense	11	6,250	6,250
Loan Interest	13	854,256	1,250,746
Arbitration Costs	12	242,017	0
Miscellaneous		7,101	27,952
Total Operating Expenses		<u>4,864,379</u>	<u>4,375,427</u>
Total Administrative and Operating Expenses		<u>5,419,421</u>	<u>4,752,651</u>
Net Profit		<u>740,448</u>	<u>838,808</u>
General Reserve at Beginning of Year		<u>1,665,403</u>	<u>826,595</u>
General Reserve at the End of Year		<u>\$2,405,851</u>	<u>\$1,665,403</u>

See accompanying notes to the financial statements.

Water Authority-Cayman

35

Statement of Cash Flow

For the Year Ended 31st December 1992

(Stated in Cayman Islands Dollars)

	1992	1991
OPERATING ACTIVITIES		
Net Income for Year	740,448	838,808
<i>Add Items Not Affecting Working capital</i>		
Depreciation	556,807	517,428
<i>Net Change in Non-Cash Working Capital Balance Relating to Operations</i>		
Increase in Accounts Receivable	(63,469)	(143,281)
Increase in Prepaid Expenses	(9,365)	0
Increase in Customer Deposits	33,095	16,237
Increase in Accounts Payable & Retentions Payable	272,999	34,906
Increase in Interest Payable	105,291	160,895
Decrease in Advance	0	(200,000)
Decrease in Office Lab Supplies	8,902	0
Cash Provided by Operating Activities	1,644,708	1,224,993
INVESTING ACTIVITIES		
Cost of fixed assets purchased	(4,003,725)	(1,548,937)
Construction in Progress	358,491	(698,941)
Cash Applied to Investing Activities	(3,645,234)	(2,247,878)
FINANCING ACTIVITIES		
Repayment of Long Term Debt	(422,042)	(5,648,054)
Proceeds of Long Term Debt	2,251,178	6,774,667
Overdraft Facilities	564,986	0
Cash Provided by Financing Activities	2,394,122	1,126,613
Increase in Cash During the Year	393,596	103,728
Cash at the Beginning of the Year	59,543	(44,185)
	\$453,139	\$59,543

See accompanying notes to the financial statements.

Water Authority-Cayman Islands**Notes to Financial Statements****31st December 1992**
(stated in Cayman Islands dollars)**1. Background Information**

The Water Authority of the Cayman Islands ("the Water Authority") is a statutory body established on 1st January 1990 under the Water Authority Law (Law 10 of 1982), as amended.

The Water Authority is principally engaged in the management of water supply and sanitation affairs of the Cayman Islands including the provision of public water supplies, sewerage systems and the management, development and protection of water resources.

2. Significant Accounting Policies

The significant accounting policies adopted by the Water Authority in these financial statements are as follows:

(a) Basis of accounting

The financial statements of the Water Authority are prepared on an accruals basis, except for contributions to capital expenditure from private individuals which is treated as income in the year of collection (see note 8 below).

(b) Depreciation

Depreciation is provided on all tangible fixed assets, other than land, on a straight line basis at rates calculated to write off the cost of valuation of each asset evenly over its expected useful life as follows;

Water and Sewerage systems	50 years
Machinery and Equipment	10 years
Office Furniture	10 years
Office Equipment	5 Years
Vehicles	5 Years

Water Authority-Cayman Islands
Notes to Financial Statements (cont...)**31st December 1992**

(stated in Cayman Islands dollars)

(c) Foreign currency translation

Assets and liabilities denominated in currencies other than Cayman Islands dollars are translated at exchange rates in effect at the balance sheet date. Revenue and expense transactions denominated in currencies other than Cayman Islands dollars are translated at exchange rates ruling at the time of those transactions. Gains and losses on exchange are credited or charged in the Statements of Income and Expenses.

Due to the volatility of exchange rates, realized and unrealized gains and losses on the translation of foreign currency loans are transferred to a reserve for exchange fluctuations for foreign currency loans and the net gain or loss will be recognized as income when the loans are completely repaid (see note 7).

(d) Allowance for bad debts

The allowance for bad debts is established through a provision for bad debts charged to expenses. Accounts receivable are written off against the allowance when management believes that the collectibility of the account is unlikely. The allowance is an amount that management believes will be adequate to cover any bad debts, based on an evaluation of collectibility and prior bad debts expense.

3. Accounts Receivable

	1992	1991
Accounts Receivable	654,372	584,910
Less: Provision for Bad Debts	<u>(5,993)</u>	<u>- 0 -</u>
Net Balance	<u>\$648,379</u>	<u>\$584,910</u>

Water Authority-Cayman Islands
Notes to Financial Statements (cont...)

31st December 1992
(stated in Cayman Islands dollars)

4. Fixed Assets

	<u>Freehold Land</u>	<u>Water Supply</u>	<u>Sewerage</u>	<u>Other Assets</u>	<u>Total</u>
Cost					
Start of Year	565,264	9,752,018	10,505,953	380,061	21,203,296
Add in Year	ooo	3,858,433	428	144,864	4,003,725
End of Year	<u>565,264</u>	<u>13,610,451</u>	<u>10,506,381</u>	<u>524,925</u>	<u>25,207,021</u>
Accum Depreciation					
Start of Year	ooo	406,031	461,783	97,268	965,082
Charge for Year	ooo	246,273	234,386	76,148	556,807
End of Year	ooo	<u>652,304</u>	<u>696,169</u>	<u>173,416</u>	<u>1,521,889</u>
Net Book Value					
End of Year	<u>\$565,264</u>	<u>\$12,958,147</u>	<u>\$9,810,212</u>	<u>\$351,509</u>	<u>\$23,685,132</u>

The value of the water supply system and sewerage system includes the value of electrical and mechanical equipment, and machinery. Interest of \$114,281 has been capitalized during the year for the water supply extension to Bodden Town (1991: nil).

The value of the other assets includes the value of tools and equipment, office furniture and equipment, and vehicles.

5. Construction in Progress

At the end of the year work commenced on phase two of the water supply extension to Bodden Town. An amount of \$429,094 had been expended on this project. Upon completion, the value of these assets will be transferred to plant and will be depreciated on a straight line basis at normal rates of depreciation. In addition, a sum of \$348,533 was expended on the sewerage capital works which will be treated in the same manner.

Water Authority-Cayman Islands
Notes to Financial Statements (cont...)

31st December 1992
(stated in Cayman Islands dollars)

6. Loans Payable

The following is a schedule of the loans payable:

	1992	1991
<i>Canadian Imperial Bank of Commerce</i>		
- Water Supply and Sewerage	8,268,685	6,021,666
<i>Caribbean Development Bank</i>		
- Sewerage	5,486,339	5,980,438
- Water Supply	2,238,541	2,312,500
<i>Cayman Islands Government</i>		
- Grand Cayman	4,822,349	4,822,349
- Cayman Brac	<u>1,053,000</u>	<u>1,053,000</u>
Total Debt	21,868,914	19,994,617
Less: Current Portion	<u>562,537</u>	<u>414,099</u>
Total Long Term Debt	<u>\$21,306,377</u>	<u>\$19,775,854</u>

The Canadian Imperial Bank of Commerce loans are a part of a financing package of US\$16,000,000 that funded the repayment of the Barclays Bank loans and the extension of the water supply. The loans are provided at 1% over LIBOR repayable over a eight year period commencing on 1st January 1994.

The Caribbean Development Bank sewerage and water supply loans are to be repaid over 15 years at variable interest rates (4% - 8.3%). Repayment commenced on the sewerage loan in quarterly installments in June 1991 and on the water supply loan in quarterly installments in March 1992.

The Cayman Islands Government loan for Grand Cayman is interest free and is to be repaid in quarterly installments over a period of twenty five years commencing on 1st April 1995. The Cayman Islands Government loan for Cayman Brac has a moratorium on interest until repayments commence and then attract interest at a fixed rate of 8%, over a period of 15 years commencing on 1st April 1995.

The CIBC loan is held in the name of the Water Authority, but it is guaranteed by the Government. The CDB loans are in the name of Government and are on-lent to the Water Authority. The Water Authority is responsible for all interest and principal repayments on these loans.

Water Authority-Cayman Islands
Notes to Financial Statements (cont...)

31st December 1992
(stated in Cayman Islands dollars)

7. Reserve for Foreign Currency Fluctuations

In accordance with the accounting policy detailed in Note 2(c) the foreign currency loans included an unrealized net loss of \$277,362 as at the balance sheet date. The balance in the Reserve for Foreign Currency Exchange fluctuations is as follows:

1991	(427,537)	Loss
1992	<u>150,175</u>	Gain
	<u>\$(277,362)</u>	Net loss

8. Miscellaneous Revenue and Charges

Miscellaneous Revenue and Charges includes \$17,130 (1991: \$175,636) contributed from private individuals to fund capital works which were taken over by the Water Authority. The relevant expenses have been capitalized as water and sewerage works.

9. Other Operating Expenses

During the year, the Cayman Islands Government provided at no charge to the Authority, legal and a limited amount of personnel services. In addition, the Water Authority provided at no charge to the Government availability and use of water for fire fighting, disposal of septage collected by the Environmental Health department, free sewerage service to a number of indigent persons in the Watler's Road area, supervision of ground water resources, administration of Plumbers Examination Board, consultative services for development control and water at a reduced Public Authority rate.

10. Pension

The Authority employs a number of staff who are seconded civil servants of the Cayman Islands Government. In respect of these staff, the Authority pays to Government the pension contribution and Government will bear all and any pension liability due to these staff members.

Water Authority-Cayman Islands**Notes to Financial Statements (cont...)**

31st December 1992
(stated in Cayman Islands dollars)

11. Leases

Property is leased in Lower Valley on which is situated the ground water reservoir and treatment works, the annual cost (\$6,250) of this lease is treated as an operational cost. The Authority leases office space from the Cayman Islands Government for its administrative office at a cost of \$2,326 per month on a month to month basis.

12. Arbitration Costs

During the year, the Authority initiated arbitration procedures against Camp, Dresser, & McGee, the consultants for the West Bay Road Sewerage Project. At the completion of the arbitration proceedings a ruling in favour of the Authority was handed down. Subsequently, a payment of \$682,832, including an amount for interest, was received. A sum of \$242,017 was spent on arbitration expenses including legal fees and other miscellaneous expenses.

13. Restatement of 1991 Figures

The prior year figures have been restated to incorporate interest payments made during 1992 on the Caribbean Development Bank loan for the sewerage project relating to a five and a half month period in 1991; which was not accrued in the 1991 financial statements. The balance of the Caribbean Development sewerage loan for 1991 has also been restated to reflect changes made in the exchange rates originally provided to the Authority.

In addition, certain comparative figures have been reclassified to conform with the current year's format of presentation.

14. Commitments

At year end the Authority had estimated financial commitments of \$2,276,122 for the extension of the water supply system in Bodden Town. In addition, \$518,307 was incurred to complete the relining of the West Bay Road sewage system.